

Appendix I

Abbreviations and Glossary

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Abbreviations

ABC	Analysis of benefits and costs
ADP	Automated data processing
ATT	Advanced training technologies
BCR	Benefit/cost ratio
CATV	Cable television
CBT	Computer-based training
CD-ROM	Compact disc-read only memory
CGI	Common gateway interface
CLI	Compression Labs, Inc.
CTA	Central Training Academy
CTED	Clearinghouse for Training, Education, and Development
CVTS	Compressed video teleconferencing services
DCF	Discounted cash flow
DLAST	Distance Learning Appropriateness Screening Tool
DOE	Department of Energy
DTIS	Department Training Information System
FTE	Full-time equivalent
FTS	Federal Telephone Service
GAO	General Accounting Office
Gbps	Gigabits per second
GATE	Government Alliance for Training and Education
GET	General education and training
GHz	Gigahertz
HTML	Hypertext markup language
Hz	Hertz (cycles per second)
IBM	International Business Machines
IDP	Individual Development Plan
IM	Information Management
ISDN	Integrated Services Digital Network
ITV	Interactive television
kbps	Kilobits per second
LAN	Local area network
LEARN	Local Educational Administrative Requirements Network

MB	Megabytes
Mbps	Megabits per second
MIDI	Musical Instrument Digital Interface
MM	Multimedia
MPEG	Moving Pictures Experts Group
NET	Internet
NPV	Net present value
NTU	National Technological University
OMB	Office of Management and Budget
PC	Personal computer
ROI	Return on investment
SAI	Strategic Alignment Implementation
SAT	Systematic Approach to Training
SCVTS	Switched compressed video teleconferencing services
SIM	Strategic information management
SMART	System Management for Annual Requested Training
TQP	Technical Qualifications Program
TRADE	Training Resources and Data Exchange
TSL	Technology-supported learning
VSAT	Very small aperture terminal
WAN	Wide area network
WWW	World Wide Web

Glossary

ADVANCED TRAINING TECHNOLOGIES (ATT). Technologies (such as audio and video conferencing, multimedia, and the Internet) that can be utilized to facilitate the development and delivery of training to individuals at geographically separated locations.

ANALOG. Information represented by a continuous electromagnetic wave encoded so that its power varies continuously with the power of a signal received from a sound or light source.

ANALYSIS OF BENEFITS AND COSTS (ABC). A systematic approach for comparing alternative ways to satisfy an objective. The ABC provides a structured framework for collecting, analyzing, displaying, and communicating pertinent information to the decision making process.

ANTENNA. The device that sends or receives signals (electromagnetic) from the satellite. Also called a *dish*.

AUDIO TELECONFERENCE. Two-way audio only communication between two or more groups, or three or more individuals in separate locations.

BANDWIDTH. Determines the rate at which information can be transmitted across a medium. The rates are measured in bits (bps), kilobits (kbps), megabits (Mbps), or gigabits per second (Gbps). Typical transmission services are 64 kbps, 1.544 Mbps (T1) and 45 Mbps (T3).

BASELINE. A point of reference that can be compared to future progress.

BENCHMARKING. The process of continuously comparing an organization with the "Best in Class" to gain information that will help the organization take action to improve its performance. Benchmarking is a scientific method for identifying the best practices in a certain area and measuring an organization's processes against these practices to identify areas for improvement.

BENEFIT/COST RATIO (BCR). The present value of benefits divided by the present value of costs. The BCR provides a measure of the benefits obtained per dollar spent and is expressed as a decimal number. The benefit/cost ratio is a relative measure of an alternative's value.

BROADBAND. Communications channels that are capable of carrying a wide range of frequencies. Broadcast television, cable television, microwave, and satellite are examples of broadband technologies. These technologies are capable of carrying a great deal of information in a short amount of time, but are more expensive to use than technologies like telephone that require less bandwidth.

BROADBAND NETWORK. A local area network residing on coaxial cable capable of transporting multiple data, voice, and video channels.

BUSINESS CASE. A projection over the life of a program (or system) of the associated costs and benefits. It is typically used to determine the economic feasibility and cost effectiveness of a project, compare the present system (status quo) to a proposed change or enhancement, and predict the payback point and return on investment.

BUSINESS MODEL. A repository of meta data about an organization, which stores information pertaining to business functional areas, business processes, information systems, and information needs, and also stores the relationships between and among this information.

BUSINESS PROCESS. A sequence of logically related tasks that take an input, add value to it, and provide an output to an internal or external customer. The work activities that produce products or services (i.e., create value for the customer) including the efforts of people and equipment.

CABLE/CABLE TELEVISION. A broadband communications technology in which multiple television channels as well as audio and data signals are transmitted either one way or bidirectionally through a distribution system to single or multiple specified locations. Uses coaxial cable to transmit programs.

C-BAND. A category of satellite signals that transmit from earth at 4.0 to 6.0 gigahertz (GHz) and receive from the satellite at between 3.7 and 4.2 GHz, which are also shared with terrestrial line-of-sight microwave users. This band of transmissions has less path loss than the other standard used for satellites (Ku-band), but must have a large antenna for the same receiver input power level due to its use of longer wavelength frequencies.

CHANNEL. Paths over which Musical Instrument Digital Interface (MIDI) information travels. MIDI can send data on as many as 16 channels with a single MIDI cable.

COMPACT DISC. Plastic platter 4.72 inches wide that stores digital data or music, encoded and read by laser beam. Sometimes called *optical discs*.

COMPACT DISC-READ ONLY MEMORY (CD-ROM). Prerecorded, non-erasable disc that stores over 650 megabytes (MB) of digital data. The storage capacity of the CD-ROM varies.

COMPUTER-BASED TRAINING (CBT). Multimedia courses delivered online via a standalone computer workstation. The most advanced CBT allows learners to interact with the computer; the most basic form acts as electronic page turners.

COMPRESSED VIDEO. A reduced video signal output level that is used to reduce transmission requirements and associated costs. Transmits changes from one frame to the next which reduces the bandwidth to send them over a telecommunications channel. Also called *bandwidth compression, data compression, or bit rate reduction*.

COMPRESSION. Reduction of a signal's output level in relation to its input level to reduce storage requirements.

CORPORATE APPROACH. An approach involving the identification of common education and training needs across the Department (cross-cutting), and the collaboration of organizations (including the pooling of funds and other resources) to provide education and training opportunities that are applicable and accessible to more than one organization within the Department. The corporate approach takes full advantage of the enclaves of expertise that exist throughout the Department.

COST. The fixed and recurring costs associated with executing a process or providing a service (i.e., labor, materials, technology).

COURSEWARE. Software used in teaching. Often used to describe computer programs designed for the classroom.

CROSS-CUTTING. Education and training needs or courses that are shared and are mostly equivalent for several program, field offices, and laboratories within the DOE complex. It may be useful for each program/office or facility to add to or modify generic information to make it more site-specific. Mandated Environment Safety and Health training is an example of cross-cutting.

DEVELOPMENT. Development is most often used to denote "soft" interpersonal skills development or career/management development opportunities (only some of which are formal courses).

DIGITAL. Data stored in bits and bytes on a computer. It can be manipulated and displayed on a computer screen.

DISC. A storage medium for digital data usually in the form of a video disc or compact disc. Video discs and other optical storage media are referred to as *discs* (with a "c"). Computer diskettes are electromagnetic and referred to as *disks* (with a "k").

DISTANCE EDUCATION. Teaching and learning environment in which the instructor and the student(s) are geographically separated, and a combination of electronic media and print materials are used for instructional delivery. Distance Education includes distance teaching--the instructor's role in the process; and distance learning--the student's role in the process. Called *Technology-Supported Learning* in this business case.

DISTANCE LEARNING. The student's role in the process of distance education. Takes advantage of a wide range of technologies, such as interactive television, computer-based training, and Internet.

DOWNLINK. Transmission of radio frequency signals from a satellite to an earth station. A satellite receiving station.

EDUCATION. The learning experiences associated with the completion of a pre-established curriculum in order to gain a general body of knowledge that can be applied to a career. Education is frequently characterized as having broader, somewhat more global objectives of preparing a person to be a productive citizen or employee.

ELECTRONIC MAIL (E-mail). Mail or communications sent and received through electronic, nonpaper methods. Usually an mainframe, a local area network, or a bulletin board system is the transmission medium.

ETHERNET. Network communications standard developed by Xerox. Data transmission speed is typically 10 megabits per second.

FACILITATOR. (1) In adult education (androgogy), the individual who acts as a guide and resource to the students. (2) During the use of advanced training technologies, the individual responsible for the local component of a video teleconference site.

FIBER OPTICS. Communications medium based on a laser transmission that uses a glass or plastic fiber which carries light to transmit video, audio, or data signals. Each fiber can carry from 90 to 150 megabits of digital information per second or 1,000 voice channels. Transmission can be simplex (one-way) or duplex (two-way) voice, data, and video service.

FIBER OPTIC CABLE. Cable that contains a fine strand of glass-like material. Light, not electricity, is conducted through the cable.

FULL-MOTION VIDEO. A video signal output level that is not compressed. Video frames are displayed at 30 frames per second.

FULLY INTERACTIVE AUDIO/VIDEO. Two or more video conferencing sites can interact with one another via audio and video signals. Two sites may be fully interactive without necessarily being full-motion sites.

GROUPWARE. An interactive collaboration of workers or students via networked applications on the computer. It provides audio, video, and data sharing among a group of users using the network at the same time. Examples of programs/equipment that foster the concept of groupware is CLI's Cameo, Northern Telecom's Visit, and IBM's Person-to-Person.

HYPERMEDIA. Delivery of information through multiple connected pathways. Hypermedia allows users to branch seamlessly between text, graphics, audio, or video.

INTEGRATED SERVICES DIGITAL NETWORK (ISDN). A set of standards that provide a common architecture for the development and deployment of digitally integrated communications services. A set of standardized customer interfaces and signaling protocols for delivering digital circuit-switched voice/data and packet-switched data services.

INTERACTIVE MULTIMEDIA. A multi-level multimedia presentation that allows the user to access information randomly and nonsequentially.

INTERACTIVE TELEVISION (ITV). One of the most common forms of technology-supported learning. The instructor and student are physically separated, but connected through video, audio, and sometimes data links.

INTERACTIVE VIDEO. The capability to transmit and receive two-way video transmissions between two or more sites.

INTERNET. A worldwide connection of individual computer networks. The roots of the Internet lie in a collection of computer networks that were developed in the 1970s under the sponsorship of the United States Department of Defense. There is no surcharge to use Internet. Plans are in place to rename the Internet as the National Research and Education Network.

Ku-BAND. A category of satellite transmissions higher in frequency than C-Band, which are being transmitted from satellites placed in a geostationary orbit. The Ku-Band includes the microwave frequencies from 12 to 18 GHz and the band of satellite downlink frequencies from 11.7 to 12.2 GHz.

LEARNING ACTIVITIES. (1) The specific presentation materials, examples, practice exercises, simulations, group discussions, etc. associated with specific learning objectives, which are typically described in lesson plans. (2) All general methods that support learning. Formal instruction, mentoring, on-the-job training, and simulator-based training are examples of high-level learning activities.

LEARNING CENTER. An area equipped with multimedia workstations and other advanced training technologies that is designated for the performance of learning activities. Also called *training center*.

LINK. Connection from one place or medium to another. For example, buttons contain the linking information between cards in hypermedia.

LOCAL AREA NETWORK (LAN). Interlinked microcomputer system, the dimensions of which are usually less than 2 miles. Transmission rates are usually above 1 megabit per second.

MICROWAVE. That portion of the electromagnetic spectrum from approximately 1,000 MHz to 100,000 MHz. Due to its short wavelength characteristics, microwave energy is capable of being focused in a concentrated beam in specific directions and sent over long distances.

MULTIMEDIA. The integration of two or more media with a personal computer. The media list includes audio, video, text, graphics, and animation. The latest technologies even add scents.

NEEDS ASSESSMENT. The process of identifying customers; gathering and analyzing customer training and technology requirements; and determining customer-required levels of service, and training and technology needs for the short and long terms.

NET PRESENT VALUE (NPV). A dollar amount calculated by subtracting the total present value cost from the total present value benefit of the alternative. The higher an alternative's positive NPV, the more its benefits exceed its costs.

NON-CORPORATE APPROACH. An approach to education and training in which organizations make decisions about and fund education and training for their personnel without taking full advantage of the courses and resources available from other organizations in the Department. In a non-corporate environment each organization is acting independently with minimal sharing of resources and information.

ONE-WAY VIDEO, TWO-WAY AUDIO. People at the originating location can be seen and heard by participants at other locations. The people at the originating location can hear, but cannot see participants at other locations.

PARTNERING. A long-term commitment between two or more organizations for the purpose of achieving specific business objectives by maximizing the effectiveness of each participant's resources.

PERFORMANCE MEASURES. The information used to measure the effectiveness of the process execution.

POINT-TO-MULTIPOINT. A teleconference broadcast from one location to several receiving locations.

POINT-TO-POINT. A teleconference broadcast between two locations.

RECEIVE SITE. The site receiving the transmission from the origination site. A video teleconference might have 100 or more receive sites. Also known as *downlink sites*.

RETURN ON INVESTMENT (ROI). In this business case, a dollar amount equal to the net benefit of an alternative. ROI for each alternative was calculated by taking the difference between the total benefits and the total costs over the 5-year analysis period. Also expressed as a percentage.

SATELLITE. An electronic retransmission device serving as repeater in a geostationary orbit around the earth for the purpose of receiving and retransmitting electromagnetic signals. It normally receives signals from a single source and retransmits them over a wide geographic area.

SLIDE SHOW (Electronic). Computer screens designed in a sequence for projection purposes. Many hypermedia programs provide transitional effects for these sequences (such as dissolves or wipes).

T1. High-speed digital data channel/carrier with a bit rate of 1.544 Mbps, which requires a bandwidth of approximately 2.1616 MHz to transmit a television-type cable environment. Each T1 circuit can accommodate 24 voice channels.

T3. A carrier of 45 Mbps bandwidth. One T3 channel can carry 28 T1 channels. Used for point-to-point digital video transmissions or for major PBX-PBX interconnection. Dedicated service delivered via fiber optic cable.

TECHNOLOGY-SUPPORTED LEARNING (TSL). An approach to using advanced training technologies as delivery methods for cross-cutting education and training learning activities. Also called *Distance Education*.

TELECONFERENCE. Electronic communications between two or more groups, or three or more individuals, in separate locations via audio, audio graphics, video, or computer.

TRAINING. Learning situations in which specific objectives can be readily identified. Training helps fit a person for a particular job in a particular system and may be very procedural in nature.

TWO-WAY VIDEO, TWO-WAY AUDIO. People at the originating location can be seen and heard by participants at other locations. The people at the originating location can hear and see participants at other locations. Usually limited to point-to-point communication.

UPLINK. Transmission of radio frequency signals from an earth station to a satellite.

VIDEO. The bandwidth and spectrum of the signal that results from television scanning and is used to reproduce a picture.

VIDEO TELECONFERENCE. A meeting involving at least one uplink and a number of downlinks at different locations. Electronic voice and video communication between two or more locations. The teleconference can be fully interactive voice and video or two-way video. It may involve full-motion, compressed, or freeze-frame video.

WORKSTATION. An integrated set of components, consisting of a computer and peripherals, used to deliver education and training learning activities or to provide a computer work area.

WORLD WIDE WEB (WWW). A networked, information delivery system that presents information in hypermedia-based format. The World Wide Web displays pages of information with links to other pages, images, video clips, and sound clips.

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